CLAIMS

1. A video signal-processing device comprising:

quantity of black expansion computing means for computationally determining the quantity of black expansion when the luminance component of the input video signal is not higher than a first luminance level;

regulating means for regulating the quantity of black expansion computationally determined by the quantity of black expansion computing means;

output video signal generating means for generating an output video signal by adding the quantity of black expansion regulated by the regulating means to the luminance component of the input video signal; and

first field integrating means for integrating the luminance component of the output video signal not higher than a second luminance level for a field;

the regulating means being adapted to regulate the quantity of black expansion according to the luminance component integrated by the first field integrating means.

2. The device according to claim 1, wherein the quantity of black expansion computing means computes the quantity of black expansion according to the difference between the luminance component of the input video signal and the first luminance level.

3. The device according to claim 1, further comprising:

comparing means for comparing the luminance component as integrated by the first field integrating means with a predefined convergence level; and

the regulating means being adapted to regulate the quantity of black expansion according to the result of comparison of the comparing means.

4. The device according to claim 3, wherein the regulating means is adapted to increase the quantity of black expansion when the integrated luminance component is smaller than the convergence level, limit the quantity of black expansion when the integrated luminance component is larger than the convergence level and make the quantity of black expansion equal to 0 when the integrated luminance component is equal to the convergence level.

5. The device according to claim 3, wherein the regulating means regulates the quantity of black expansion on the basis of the difference between the integrated luminance component and the convergence level.

6. The device according to claim 3, wherein the comparing means makes the quantity of black expansion equal to 0 when the integrated luminance component is close to the convergence level.

7. The device according to claim 3, further comprising:

gain output means for outputting a feedback gain according to the result of the comparison as transmitted from the comparing means;

the regulating means being adapted to regulate the quantity of black expansion by multiplying the quantity of black expansion by the feedback gain output from the gain output means.

8. The device according to claim 1, further comprising:

black area computing means for computing the area where the luminance component is not higher than the second luminance level in the field of the output video signal as black area;

the regulating means being adapted to regulate the quantity of black expansion on the basis of the luminance component integrated by the first field integrating means and the black area determined by the black area computing means.

9. The device according to claim 8, further comprising:

second field integrating means for integrating the luminance component of the output video signal not higher than a third luminance level for a field;

the black area computing means being adapted to determine the black area according to the difference between the output of the first field integrating means and the output of the second field integrating means.

10. The device according to claim 1, wherein the regulating means is adapted to regulate the quantity of black expansion on a field by field basis.

11. A video signal-processing method comprising:

computationally determining the quantity of black expansion when the luminance component of the input video signal is not higher than a first luminance level;

regulating the computationally determined quantity of black expansion;

generating an output video signal by adding the regulated quantity of black expansion to the luminance component of the input video signal;

integrating the luminance component of the output video signal not higher than a

second luminance level for a field; and

further regulating the quantity of black expansion according to the integrated luminance component.

12. The method according to claim 11, wherein the quantity of black expansion is computed according to the difference between the luminance component of the input video signal and the first luminance level.

13. The method according to claim 11, further comprising:

comparing the integrated luminance component with a predefined convergence level so as to regulate the quantity of black expansion according to the result of comparison of the comparing means.

14. The method according to claim 13, wherein the quantity of black expansion is increased when the integrated luminance component is smaller than the convergence level and the quantity of black expansion is limited when the integrated luminance component is larger than the convergence level whereas the quantity of black expansion is made equal to 0 when the integrated luminance component is equal to the convergence level.

15. The method according to claim 13, wherein the quantity of black expansion is regulated on the basis of the difference between the integrated luminance component and the convergence level.

16. The method according to claim 13, wherein the quantity of black expansion is made equal to 0 when the integrated luminance component is close to the convergence

level.

17. The method according to claim 13, further comprising:

generating a feedback gain according to the result of the comparison;

the quantity of black expansion being regulated by multiplying the quantity of black expansion by the generated feedback gain.

18. The method according to claim 11, further comprising:

computing the area where the luminance component is not higher than the second luminance level in the field of the output video signal as black area;

the quantity of black expansion being regulated on the basis of the integrated luminance component and the determined black area.

19. The method according to claim 18, further comprising:

integrating the luminance component of the output video signal not higher than a third luminance level for a field;

the black area being determined on the basis of the difference between the integrated luminance component and the luminance component obtained by integrating the output video signal not higher than the second luminance level for a field.

20. The method according to claim 11, wherein the quantity of black expansion is regulated on a field by field basis.